

Applicant: Heinrich Bollmann
Serial No.: 09/456,371
Group Art Unit: 1783

REMARKS

Claims 19, 20, 22, 23 and 30-35 remain in this application with claims 19 and 33 in independent form. Claim 19 has been amended. Claims 31-35 are newly added. Claims 1-18, 21, and 24-29 have been previously cancelled.

Applicant has amended claim 19 to recite that the microcellular polyurethane elastomer is chemically bonded to the thermoplastic polyurethane molding and that the chemical bond between the microcellular polyurethane elastomer and the thermoplastic polyurethane molding has an ultimate tensile strength sufficient for replacing rubber-metal composites. There is support in the specification as originally filed on pages 1, 9, and 10-11 for this limitation. Specifically on page 1 it states that an object of the invention is to develop composite elements to replace known rubber-metal composites. Further on page 9 it states “the novel composite elements, in particular the damping elements, have not only showed markedly improved adhesion between the thermoplastic polyurethanes (TPU)(i) and the microcellular polyurethane elastomers (ii) but also improved mechanical properties of (i)...” On pages 10-11, the ultimate tensile strength of the claimed composite elements is described.

The subject invention replaces the prior art rubber-metal composite with the thermoplastic polyurethane molding. As discussed at length in the specification as originally filed, these prior art rubber-metal composites have disadvantages that include high density of the metal constituents, short service life of the rubber, and loss of adhesion between the rigid metal and the flexible rubber (*see page 1, lines 20-34 of the originally filed specification recited above*). The subject invention overcomes these disadvantages.

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Applicant respectfully submits that none of the cited references disclose the microcellular polyurethane elastomer chemically bonded to the thermoplastic polyurethane molding and that the chemical bond between the microcellular polyurethane elastomer and the thermoplastic polyurethane molding has an ultimate tensile strength sufficient for replacing rubber-metal composites. Applicant further submits that none of the cited references disclose the molding having a thickness of from 2 to 12 mm. Additionally, with reference to claims 31 and 32, none of the cited references disclose ultimate tensile strength of 1 to 2 N/mm² or 1.07 to 1.52 N/mm².

New claim 33 recites a composite damping element comprising i) a support member and ii) a flexible bearing member. The support member (i) is formed from a thermoplastic polyurethane molding having excess isocyanates groups, the molding formed from a) isocyanates and b) compounds reactive to isocyanates in a ratio of greater than 1.06:1, and the support member having a thickness of from 2 to 12 mm. The flexible bearing member (ii) is formed from microcellular polyurethane elastomer, the elastomer formed from a) isocyanates and b) compounds reactive to isocyanates in a ratio of 0.8:1 to 1.2:1 and in the presence of blowing agents. The flexible bearing member is chemically bonded to the support member and the chemical bond exhibits an ultimate tensile strength from 1.07 to 1.52 N/mm² without adhesion promoters. The composite damping element has improved dampening and vibration absorption as a result of the chemical bond securing the flexible bearing member to the support member.

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Applicant respectfully submits that none of the cited references disclose, teach, or suggest each and every limitation of claim 33 and therefore claim 33 is believed to be allowable. Claims 34 and 35 depend from claim 33 and are also believed to be allowable.

Accordingly, it is respectfully submitted that the Application, as amended, is now presented in condition for allowance, which allowance is respectfully solicited. Applicant believes that no fees are due, however, if any become required, the Commissioner is hereby authorized to charge any additional fees or credit any overpayments to Deposit Account 08-2789. Further and favorable reconsideration of the outstanding Office Action is hereby requested.

Respectfully submitted

HOWARD & HOWARD ATTORNEYS PLLC

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Date

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